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White-Collar Productivity: The National Challenge

*A study by The American Productivity Center
and sponsored by Steelcase Inc.*

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Introduction: The Nature Of This Study

America Shifts Gears

White-collar productivity is a relatively recent matter of concern for America's business community. Only in the past four to five years has attention to the contribution and effectiveness of white-collar workers been noticeable on a broad scale.

At the turn of the century, the majority of the nation's workers were employed in agriculture. With increased industrialization and emphasis on manufacturing, the economy shifted and the workforce followed suit. The nation enjoyed a healthy and growing rate of productivity, averaging about 3 percent per year.

Then, with the emergence of service and communications oriented industries, we discovered that a great deal of work no longer fit the traditional production processes. Much white-collar work was intangible and could not be readily observed or evaluated. The valuable industrial engineering lessons of the previous decades were of limited application in the office, and noticeable productivity increases seemed to come from technological advances rather than from a leveraging of the workforce.

A Growing Force

The significance of the situation became magnified by the size and salaries of the white-collar workforce. White-collar workers today account for nearly 53 percent of the adult workforce and \$1 trillion in annual compensation, or roughly 70 percent of industry's annual payroll including factory labor.

The Bureau of Labor Statistics estimates that the white-collar workforce will grow to 55 percent by 1985. Some say it could climb to 90 percent of the total U.S. wage-earner group by the turn of the century.

Clearly, the measurement and improvement of white-collar productivity is one of the single largest challenges facing our economy today.

Introduction (*continued*)

Two Previous Studies Set The Stage

In 1978, Steelcase Inc. commissioned Louis Harris and Associates to conduct a study of the attitudes of office workers, managers and office designers toward the office of "today and tomorrow."

Again in 1980, the Louis Harris organization questioned over 1,000 office workers and managers to look for the keys to increasing white-collar productivity without sacrificing the quality of work life.

Among other conclusions, the researchers noted that workers were willing to be more productive if they were provided the proper tools they needed; were brought into the decision-making process that affected their working lives; and if comfort requirements were satisfied.

In general, the white-collar work force was found to be dedicated, highly trained, in tune with management, and very aware of their responsibilities to increase output.

Looking For Hard Data

Recognizing the critical need for "hard data," Steelcase and The American Productivity Center (APC), the nation's recognized authority in the field, collaborated in this study of past and present productivity measurement and improvement efforts.

This report details how American companies are pursuing the problem of measuring white-collar productivity and shows that some have scored impressive gains.

The Study

The purpose of the study was to discover the techniques that have led to significant productivity gains in American offices. The study took over six months to construct and complete. Survey forms were sent to over 600 U.S. companies that had exhibited an interest in productivity. From that group, the Houston-based American Productivity Center received 140 responses and 99 completed forms.

The study focused on significant, previously unanswered questions about white-collar productivity efforts:

- what programs have been undertaken
- how firms approached the challenge
- what outcomes have been achieved

Any Clues?

One important area of the study was the attempt to examine the relationship that exists between three segments of the office environment:

human resource developments (the people)

automation techniques (the systems)

environmental considerations (the habitat)

Not all respondents utilized all three techniques in their productivity improvement programs. Some focused singly on office automation, others on environmental design and still others on human factors developments.

Those who improved productivity through environmental design techniques focused on the use of systems furniture, lighting arrangement, floor and wall coverings and temperature and air quality control.

Pinpointing Success

An important feature of the White-Collar Productivity Study is the development of in-depth case studies. From information provided by participating companies, the research team published the procedures employed and the results obtained by 25 companies considered to be leaders in the field of white-collar productivity measurement and enhancement. These studies may be obtained by writing to: Steelcase Inc. Productivity Report, Grand Rapids, MI 49501, (616-247-2281)

Guidelines Used For The Study

Assumptions Replaced Artificial Distinctions

The American Productivity Center made five assumptions that comprise a framework for the survey, interpretation of its findings, and the case histories:

1. Productivity improvement depends on the integration of people, tools and places.
2. The nature of work means more than titles.
3. Any real measure of productivity must translate to the improved delivery of services or products to the "clients." ("Client" in this report means the person or function to whom a service or product is directed.)
4. Productivity results from a balance and joining of efficiency and effectiveness.
5. Productivity and quality of work life are irrevocably linked.

Assumption One: Integrate People, Tools, Places

It may seem obvious that office productivity hinges on the integration of people, the tools they use and their working environment. But the integration is so important that the premise warrants definition.

In this study, those three features were identified as: human resource development, automated office systems, and environmental design. The commonly recognized components of each were identified as follows:

Human Resource Development

Profit Sharing

Work Simplification

Employee Survey Feedback

Team Building

Participation Groups/Quality Circles

Automated Office Systems

Word Processing

Electronic Mail

Teleconference/Electronic Meetings

Records Management

Decision-Making Support

Environmental Design

Systems Furniture

Lighting Arrangements

Floor/Wall Covering

Temperature/Air Quality Control

A vast amount of information is available to support the worth of scrutinizing any one feature for a clue to increasing productivity. But to use any one of the features without regard to their coordination is to lose sight of the payoff that can come from the mix.

Improvement of any one office service, for example, may depend on office furniture systems, word processing terminals and work redesign. Each change can produce individual results, but the greatest advantage comes from the synergistic impact of all three.

Furthermore, in developing a service, clerical staff may use one set of tools in support of managers and professionals who rely on another means of enhancement. In turn, each person occupies an environment that affects how he or she uses the tools or enhancement factors.

Since integration is a key to the success or failure of the productivity outcome, it became the first working assumption of this study.

Guidelines (continued)

Assumption Two: Work Means More Than Titles

Titles, job labels and other arbitrary identities are of little use in characterizing work performed. As robotics and computer-mediated processes advance, these artificial identifiers will be progressively misleading.

Since the *nature* of the work is more informative, APC narrowed office work into three dimensions:

1. The degree to which work is dependent on/independent of other persons in the office.
2. How routine or variable the work is.
3. The extent to which work involves information. This can extend from mere processing, such as tabulating, to more complex forms of information-producing work, such as strategic planning and proposal writing.

Only by defining dimensions of the nature of work could analysis of productivity be translated into potential improvements in work.

The office, in the context of this study, is defined as "any place where the productivity effort was focused – a work area, a department, a division or an entire facility."

Assumption Three: Improving Delivery Of Services

Too much emphasis on *individual* efficiency often impairs the effective delivery of a company's services to its clients or users. But improved quality of output is where productivity improvement carries the greatest benefit.

Previous analysis of office productivity followed two patterns. The first was directed to more procedural, routine work, typically carried out by administrative and clerical personnel. It is more amenable to standards and work measurement and was guided by the principles of industrial engineering.

More recently, as sensitivity to compensation costs heightened, managerial and professional workers have moved into the spotlight. The primary focus has been to increase efficiency by minimizing wasted time. The typical "tools" have ranged from management techniques to electronic mail delivery, to improved physical environments.

While it is true that productivity gains can be realized from improving individual efficiency, individuals must function together to deliver a company's service to its customers. Focusing on the individual is a bit like putting the cart before the horse.

This study, then, assumed that the greatest productivity improvement comes from an integrated and coordinated effort of managers, professionals and support personnel as they develop and render services to users and clients.

**Assumption Four:
Not Efficiency Alone**

The emphasis on delivery of services leads naturally and logically to a discussion of *how* services are rendered.

Most changes in the efficiency of the delivery of services have focused on reducing costs by simplifying or speeding work flow, for example, or reducing hours.

Changes oriented toward improved effectiveness, however, center on such factors as timeliness, quality and client needs. They tend to add value, improving the *worth* of the service to the user or client.

Both cost-reduction and value-added are necessary concerns; but it is possible to over-emphasize one to the detriment of the other. Development of a service can become so cost-effective that quality and client needs are forgotten.

On the other hand, excessive expectations for quality and timeliness can result in prohibitive costs.

Development of a service would, ideally, be based on a determination of the user or clients' expectations. But explicit investigation of user needs is uncommon, and most services do not develop with conscious thought toward balancing efficient and effective delivery.

The study is based on the assumption that improved office productivity is achieved through such a balance of efficiency and effectiveness.

Guidelines (continued)

Assumption Five: Productivity Relates To Quality Of Work Life

Study after study has revealed that output is directly related to motivation. Workers repeatedly show a desire to put in "a fair day's work."

A 1979 study by the U.S. Chamber of Commerce in conjunction with the Gallup organization, for example, concluded: "U.S. workers are generally optimistic about doing a good job despite their belief that they stand to benefit least from improved productivity and performance."

A year later a study for Sentry Insurance by Louis Harris and Associates and the Center for Policy Research again verified the importance of improved productivity to American workers and their readiness "to be flexible in the interest of overall company efficiency."

When the Louis Harris organization and Steelcase twice studied office workers, the conclusion was: "Office workers are remarkably attuned to the need for productivity in the office, and feel that changes that might be instituted on their jobs would favorably affect their personal productivity. They agree that their satisfaction with their office surroundings affects their job performance, and, in turn, that their job performance affects how they feel at the end of the working day."

The White-Collar Productivity Study then, proceeded on the assumption that productivity and quality of work life are closely related and must be addressed concurrently.

Conclusions From The Findings

While the study does not reveal magical methods of measurement that can be universally applied, it does lead to certain conclusions. It also suggests that almost any improvement program—no matter how unstructured or unsophisticated—can pay handsome dividends.

Those responding to the survey revealed solid gains in:

- error reduction (up to 8.5 percent)
- task difficulty reduction (up to 15.4 percent)
- quality of product or service increases (up to 12.5 percent)
- response time reduction (up to 21.5 percent)
- office space utilization (up to 11.8 percent)
- communication improvement (up to 14.1 percent)

Overall, companies that said they had productivity improvement programs in place reported an average gain of 9.5 percent.

These highly significant gains, plus an examination of the survey findings and the American Productivity Center's experience, led to several conclusions:

1. Savings Could Be Big

The opportunity for financial improvement within the white-collar sector is enormous. Given an annual cost of \$1 trillion per year, American industry could save \$95 billion per year if they put productivity improvement programs to work.

Conclusions (continued)

2. Little is Being Done

But, according to the survey findings, the opportunity is going begging. Though the surveyed companies were chosen for their known interest in the subject of productivity, the majority of them do not have productivity improvement programs in place.

The survey demonstrated growing interest in the subject of white-collar and office productivity among corporate decision-makers. The rising interest, however, is thwarted first by a lack of information on how to organize efforts to study it, and second, by the lack of valid measurement data or proven models of success.

Consequently, though this study was designed with a bias in favor of active productivity programs, it revealed instead a portrait of U.S. white-collar productivity measurement in its infancy.

3. Paybacks Are Real

While the white-collar improvement arena appears to be an "emerging" science, there are strong financial incentives for continuing attention. Data from the study led to the conclusion that dollars spent on productivity improvement programs are cost-effective. Survey respondents reported typical paybacks ranging from 1 month to 24 months.

4. Added Value Is Often Overlooked

Costs are the focus of most programs now in place. Yet while this emphasis is understandable in light of current economic conditions, the emphasis on simply reducing costs instead of adding value could result in short-term gains at the expense of overall long-term efficiency. A positive trend is seen in the discovery that 30 percent of the respondents said they hoped to add value to the product or service being performed through the application of productivity improvement programs.

5. Beating The Averages

Productivity improvement programs can result in gains that far outstrip recent white-collar increases. While productivity in the finance and insurance industries actually *declined* 3 percent over the period 1979-81, companies responding to this survey reported gains that averaged 9.5 percent. The conclusion is that as we see more attention being paid to structured white-collar improvement programs, a significant national improvement will take place.

6. Help Is Right Around The Corner

The white-collar workforce seems only to be waiting for the opportunity to improve its output. Previous studies done by the Louis Harris organization revealed a strong willingness on the part of office workers to be more productive if management provided the necessary tools, rewards and direction. Almost two-thirds of the respondents to this survey said their employees were supportive of productivity improvement programs. It would seem that the white-collar workforce is a relatively untapped, yet highly cooperative source for national economic improvement.

7. Activities Emerge Haphazardly

Though the average time allotted to planning and implementing productivity efforts seemed adequate, several factors cast doubt on that assumption.

First, most respondents were unable to provide accurate information about the time required to execute major phases of the efforts. The lack of information indicates that few provisions were made for monitoring the progress of the effort or the effort was not preceded by any broad-based planning.

Second, without specific objectives, plans lacked signals or "signposts" of achievement. In some instances the objectives didn't bear much relationship to the outcomes, forcing survey respondents to reconstruct developments that had actually unfolded more by circumstance than by plan.

Finally, a large group of the efforts had a "technique" orientation, with expectations related to such outcomes as might be associated with a vendor's product or service rather than with company goals.

Most often, no guiding philosophy, management expectation or corporate strategic plan was apparent. There is doubt that employees perceived a relationship between their input and company involvement.

8. Efforts Lack Integration

Though the survey shows an increased understanding of the interaction among Human Resource Development, Automated Office Systems and Environmental Design, productivity improvement has not been approached from an integrated perspective.

Limitations of expertise and organizational loyalties have been difficult to overcome. Human Resource specialists, for example, are often removed from the data processing and automation professionals in both philosophy and background.

Though improved productivity depends on mutual support, not competition, among these three areas, each group tends to exploit its own knowledge and remain generally uninformed about the others' potential contribution.

Automation, for example, enters the office with assistance of one group. Employee-related developments are facilitated by another. Responsibilities for environmental design are even less clear, often left solely to the preferences of a purchasing agent, facility manager or interior designer.

This lack of integration helps to explain why so many of the improvements revealed in the survey tend to affect only one of the three important features of an office: the person, or the tools, or the environment.

Fortunately, however, there is some indication of a trend toward planning groups that include representatives from various disciplines.

9. Measurement Is Difficult

Measurement is the most perplexing and troublesome issue of all the companies' productivity efforts. At one extreme, the lack of sophisticated measures has prevented some firms from attempting to improve productivity. At the other, firms that proceed without reasonable measures discover they cannot demonstrate much change as a result of their efforts.

Since upper management needs data to make informed decisions about the work process and assignments, productivity measurement typically falls to a count of output. Such counts can be a helpful beginning in quantifying productivity, but they don't reflect variations due to changes in resources over time. Neither do they identify measures of effectiveness. Emphasis on counts in the survey invariably led to measure of the efficiency of a lower-level group at work on a routine task, such as billing. The *combined* services of managers, professionals and support staff was not measured.

Meaningful, acceptable measurement procedures and systems are vital to the success of productivity study and improvement. Yet, while several firms appear to be developing these, perhaps the worth of the process depends on first determining what should be measured.

**10. Commitment At The Top;
Confusion In The Middle**

Most managers endorse the goal of productivity improvement but are unclear on how it should unfold. The "unfolding" is typically a task of middle management, which views it with uncertainty—even confusion.

While the survey showed broad agreement on top management's role (to invest in, accept, approve and endorse productivity improvements), there was little agreement that middle management should be engaged in strategic planning.

Middle managers often have responsibility for directing productivity efforts, but minimal authority and power to do so. They often have only the power to suggest changes, while top management can discourage, refuse or disagree.

In addition, especially today, middle managers are often charged with fostering a more participatory style of management even when such a style is not demonstrated at higher levels.

Given these pressures, middle management is often the least likely to change the work environment. Accustomed to a variety of "programs" oriented toward the most recent work topic of interest, middle managers have learned to adopt a "lie-low" tactic until programs pass through or die. A productivity improvement effort is often viewed as even more work on top of an already busy schedule.

**11. "Experts" Favored
Over Workers**

Survey results suggest that most internal information has come from "experts," typically professional staff, and not from the persons directly affected by the change.

In an environment where much of the work pertains to intangible information, help from professionals is mandatory. Their observations and expertise of work flow, interpersonal dependencies, communication and work space are important to any assessment of what occurs in the office and what might improve the outcome. Yet, to ignore the advice of workers most affected by change is to court failure. For they are not only a source of valuable information, but also an essential and potentially rich source of support.

In previous research, Steelcase Inc., and Louis Harris and Associates emphasized the desire of employees to be involved in decisions which affect their office environment.

This study verifies that this desire among employees to have a voice in change remains strong, especially among the better workers, assuming that the change does not lead to immediate job losses.

Specifically, employees recognize that their companies need to be more competitive. They are often enthusiastic about enhancing the competitive edge as well as improving working conditions. Future efforts to improve office productivity must take employee experience and knowledge into account.

**12. Conclusions – Supported
By The Findings**

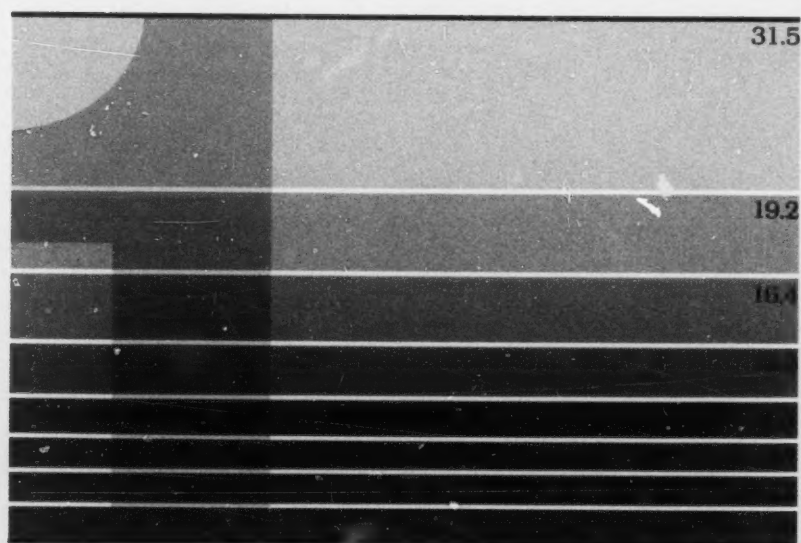
The preceding conclusions are only a partial list. Others can be drawn based on your area of interest and your needs. A detailed presentation of the findings begins on the next page.

Question 1

"Below are listed several reasons for improving office productivity. Circle the most important reason which prompted your effort."

The "desire to improve service or product quality" was the most frequently noted reason cited by almost one-third of the respondents. When participants were asked to list rather than simply check reasons for initiating efforts to improve productivity, a large number of reasons centered on the desire to reduce costs and/or increase profits.

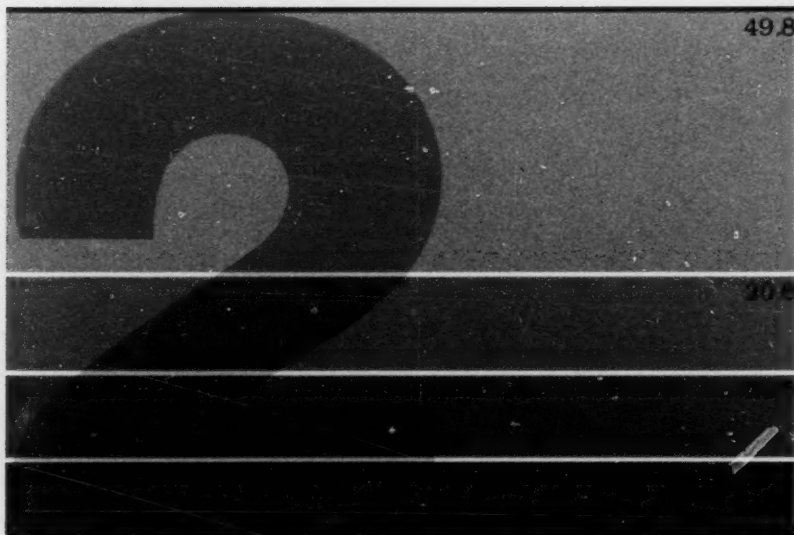
Reason	Percent
Desire to Improve Service or Product Quality	31.5
Increasing Workload or Demand	19.2
Planned or Potential Work Force Reductions	16.4
Desire to Increase Profits or Reduce Costs	12.3
Desire to Improve Employee Relations	6.1
Desire to Improve Work Conditions	4.1
Desire to Improve the Office's Image/Credibility	4.1
No Response	6.3



Almost half—49.8 percent—did not identify a specific objective of their productivity program. Those that did gave almost equal attention to these three objectives: 1) "to improve work flow;" 2) "to cut costs and overhead;" and 3) "to obtain ideas from the staff."

Objectives	Percent
No Specific Objectives Listed	49.8
To Improve the Work Flow in the Office	20.6
To Cut Costs and Overhead	20.5
To Obtain Ideas From the Staff	19.1

(Percentages add to more than 100 due to multiple responses)

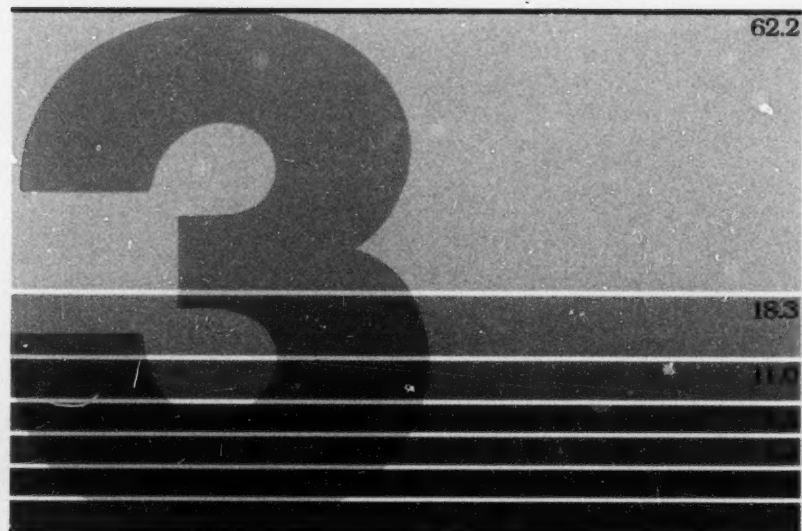


Question 3

"Describe the most important resource (personnel, materials, equipment) utilized in your productivity improvement effort."

Internal personnel and staff were identified by most companies as their most important resource in current productivity programs. Five other resources were identified, however, in the following order: 1) Electronic and Environmental Systems; 2) Leadership and Management; 3) Training and Equipment Vendor Materials; 4) Financial/Budgeting Sources; and 5) External Expertise.

Resource	Percent
Internal People/Staff	62.2
Equipment	18.3
Supplementary Materials/Consultants/Vendors	11.0
Leadership/Management	2.4
Budget	1.2
Information/Expertise	1.2
No Response	3.7

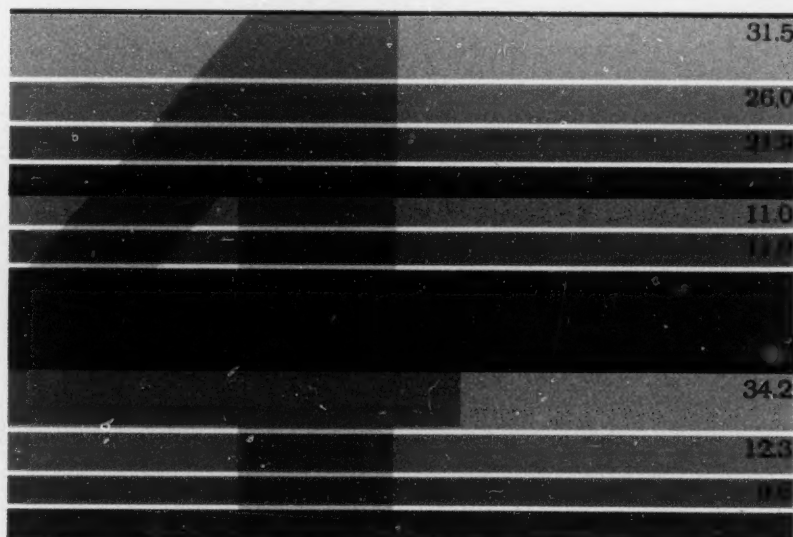


"Below are listed three levels of management. Give examples of the support provided by each management level in your productivity improvement effort."

Investment of capital, approval and acceptance, and public endorsement were seen as top management's chief areas of support for productivity efforts, ranked in that order. At the other end of the management spectrum, supervisors' key roles were identified as: 1) leadership and implementation; 2) data collection for measurement; and 3) monitoring and reporting to management, in that order. The role of middle management was less clear cut; but those respondents who did identify the primary support from that group gave equal ranking to strategic planning and encouragement.

Support Area	Percent
Top Management	
Investment of Capital	31.5
Approval and Acceptance	26.0
Public Endorsement	21.9
Middle Management	
Strategic Planning	11.0
Encouragement	11.0
Supervisors	
Leadership in Implementation	34.2
Data Collection for Measurement	12.3
Monitoring and Reporting to Management	9.6

(Percentages add to more than 100 due to multiple responses)



Question 5

"From whom did you get the information that helped you create and implement your productivity improvement program?"

Answers are expressed in percentages. Example, 50 percent of the respondents said they went to "experts" within their own organization for information about "gainsharing/profit sharing. (line one: column two).

Most respondents seem to develop their information on how to improve productivity from internal sources. It is also interesting to note that even though employees have repeatedly said they want to be involved in the decisions that affect their work and their productivity, seldom are they consulted. (source 3).

"Outside" agencies make up an important part of the information pool, and are called upon most often by those using Human Resource Development techniques. Note that 44 percent of those who needed information on "gainsharing/profit sharing" said they used outside agencies or persons.

Source #1: Persons in your organization who had used the same—or a similar—technique.

Human Resource Development:	Percent
Gainsharing/Profit Sharing	0
Work Redesign	6
Survey Feedback	7
Team Building	15
Participation Groups/Quality Circles	9
Automated Office Systems:	
Word Processing	7
Electronic Mail	13
Electronic Meetings/Teleconferencing	7
Records Management	16
Environmental Design:	
Systems Furniture	6
Lighting Arrangement	6
Floor and Wall Coverings	6
Temperature and Air Quality Control	4

Source #2: Persons in your organization whom you considered to be "expert."

Source #3: Persons in your office likely to be affected by the change.

Source #4: Outside agencies or persons.

Percent	Percent	Percent
50	6	44
47	36	11
45	19	29
52	18	15
38	20	33
59	9	25
67	4	17
52	7	33
39	26	18
61	6	29
63	6	25
53	6	35
75	0	21

"Below are listed a number of techniques that have been used to improve office productivity. Please read through the list and then, for the techniques that you have used, please answer the questions."

Although most of the companies could not provide complete data on timing, average ranges did occur.

- Planning and implementation, for example, takes six to 12 months.
- Most of the companies' improvement programs have been in place two to four years.
- Results begin to appear, for most companies, in about three months.
- Quality circles and team building techniques appear to pay out in about six months, while survey techniques and work redesign programs take almost twice as long. Profit-sharing requires about two years to pay out, while environmental changes typically take 18 months to two years. Automated office systems pay out in about one year, though some respondents claim that electronic mail systems have paid back in as little as three months.

(Note: all answers are expressed in months)

How long did it take to plan and implement each technique?

Techniques	Question 6
Human Resource Development:	
Gainsharing/Profit Sharing	6-18 Months
Work Redesign	2-6
Survey Feedback	1-6
Team Building	1-12
Participation Groups/Quality Circles	4-12
Automated Office Systems:	
Word Processing	6-12
Electronic Mail	6-18
Electronic Meetings/Teleconferencing	12-20
Records Management	6-18
Environmental Design:	
Systems Furniture	3-12
Lighting Arrangement	1-6
Floor and Wall Coverings	1-6
Temperature and Air Quality Control	1-6

How long has each technique been in use?

How long did it take to get results?

Indicate for each technique the time required to break even or "cost out."

Question 7

Question 8

Question 9

6-26 Months

1-9 Months

6-24 Months

6-30

1-3

1-6

12-24

1-3

1-12

12-24

1-3

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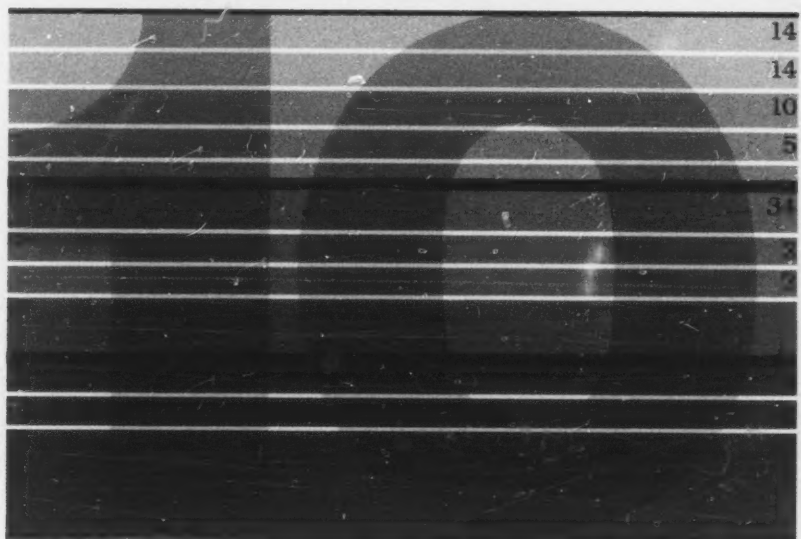
Question 10

"Circle the technique that you have found most effective in improving office productivity."

Word processing emerged a leader, listed as "most effective" by 34 percent of the firms. Team building and work redesign came next, each receiving a "most effective" rating from 14 percent of the responding companies. Ten percent rated participation groups and/or quality circles the "most effective."

(Note: several respondents did not indicate a "most effective" technique)

Technique	Percent
Human Resource Development:	
Work Redesign	14
Team Building	14
Participation Groups/Quality Circles	10
Survey Feedback	5
Automated Office Systems:	
Word Processing	34
Electronic Mail	2
Records Management	2
Environmental Design:	
Systems Furniture	3
Floor and Wall Coverings	2



"Listed below are some possible outcomes of an office productivity improvement effort. We are interested in the extent to which such outcomes occurred as a result of your effort."

Those employing Human Resource Development programs claimed productivity increases of up to 16.7 percent.

Those who focused on Automated Systems programs reported increases of ranging from 2 percent to 21.5 percent. Those who emphasized Environmental Design cited gains of up to 11.6 percent.

The total overall gain, including all area, averaged 9.5%.

Outcomes

Staffing Requirements Reduced

Task Difficulty Reduced

Errors Reduced

Distractions Reduced

Response Time Reduced

Absenteeism Reduced

Turnover of Staff Reduced

Staff Grievances Reduced

Travel Time Reduced

Office Space More Efficiently Used

Necessary Communication Made Easier

Work Output Increased

Quality of Product or Service Increased

Timeliness of Delivery Increased

Needs of Client Better Met

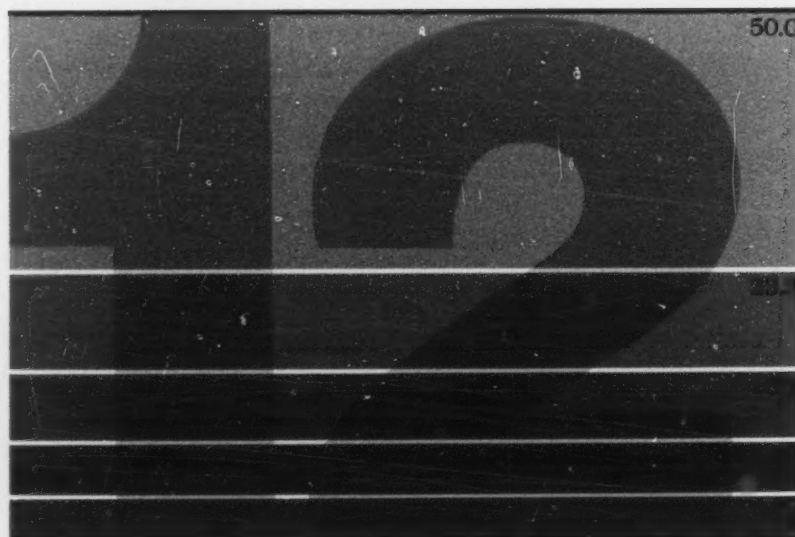
Image/Credibility of Office Increased

a Percent of Users Who Recorded Improvement
b Percent of Improvement (average)

Human Resources Development		Automated Office Systems		Environmental Design	
a	b	a	b	a	b
69.6	14.7	66.7	10.4	40.0	3.5
60.0	9.7	81.5	15.4	30.0	3.5
69.6	7.3	85.2	8.5	26.7	5.0
30.0	6.7	20.4	7.5	80.0	7.9
51.7	16.7	70.4	21.5	30.0	3.0
31.7	5.9	9.3	2.0	30.0	4.3
40.0	9.5	11.1	6.0	40.0	4.0
40.0	11.3	22.2	6.0	40.0	10.3
21.7	5.5	18.5	5.0	26.7	7.5
31.7	11.8	31.5	10.7	83.3	10.5
63.3	14.1	61.1	11.4	46.7	6.5
76.7	11.9	87.0	16.3	53.3	11.6
66.7	12.4	72.2	12.5	50.0	3.0
48.3	14.4	68.5	10.6	26.7	6.5
53.3	13.0	61.1	9.4	36.7	9.0
58.3	3.6	55.6	10.9	50.0	8.3

A high percentage of respondents could not readily identify measurement procedures for tracking improvement. Of those who did, however, half used raw counts such as output or attendance data. Almost one-quarter used a "displaced cost" measure, while another 16.7 percent used surveys. Eight percent relied on input/output ratios to measure results.

Procedure	Percent
Raw Counts (Such as Output, Attendance)	50.0
Costs Displaced	23.3
Surveys	16.7
Output/Input Ratios	8.0
Procedures Outside the Above	2.0



This search for common characteristics among programs underway revealed the following profile: typically 80 employees were affected; an average of 14 work groups were involved; and the average expenditure was \$113,000. While training covered several areas, it was concentrated on word processing and quality circles.

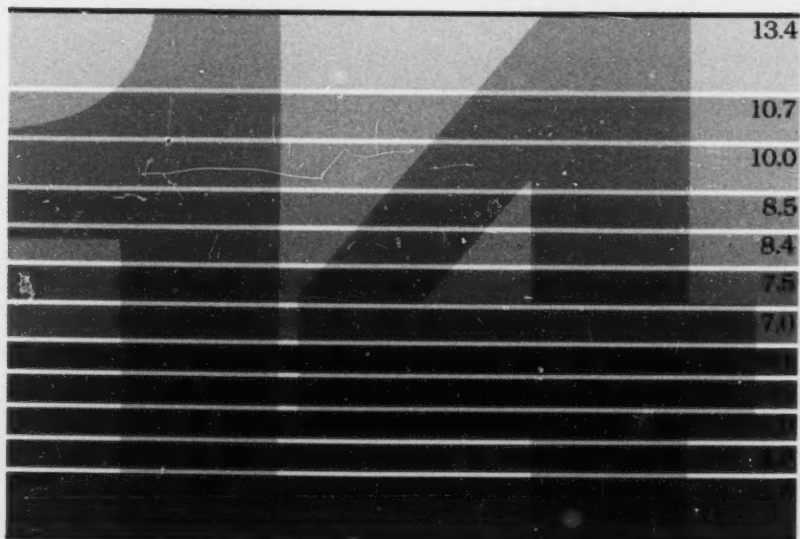
Categories	Typical
A. Number of Employees Directly Affected	80
B. Number of Work Groups (Within the Department or From Outside) Involved	14
C. Work Activities	Range From Typing to Strategic Corporate Planning
D. Approximate Typical Total Cost	\$113,000
E. Topic Areas in Which Training Was Provided:*	Percent
Word Processing	60
Quality Circles/Participation Groups	12
Processing/Terminal Operation	8
Work Redesign	6
Problem Solving	6
Supervising Managing	4
Telephone Systems	2
Communication Skills	2
F. Number of Persons Who Received Training	80

Note: *This percentage applies to the number of respondents who offered training and demonstrates where areas of training were concentrated.

"What was the most difficult problem or obstacle that arose during your productivity improvement effort?"

Inadequate measurement topped the list of "most difficult problems associated with efforts"—13.4 percent of respondents named it. That was immediately followed by: 1) uninformed management; 2) management support and involvement; 3) staff reaction and support and 4) resistance by long-service staff.

Obstacle	Percent
Inadequate Measure	13.4
Uninformed Management	10.7
Management Support or Involvement	10.0
Meeting Deadlines	8.5
Staff Reaction and Support	8.4
Resistance of Long Service Staff	7.5
Identifying State-of-the-Art in Office Automation	7.0
Inadequate Planning	6.1
Reconstruction of the Environment Around Staff	6.1
Locating Sufficient Outside Expertise	5.0
Lack of Staff Experience	4.8
No Response	12.5



While 40.5 percent of the respondents said reaction was positive, another 22 percent reported ultimate support after a period of initial resistance or apprehension. Almost one-fourth reported "mixed" reaction while 12.2 percent characterized reaction as "negative."

Reaction	Percent
Positively	40.5
Initial Resistance, Ultimate Support	22.0
Mixed	22.0
Negatively	12.2
No Response	3.3

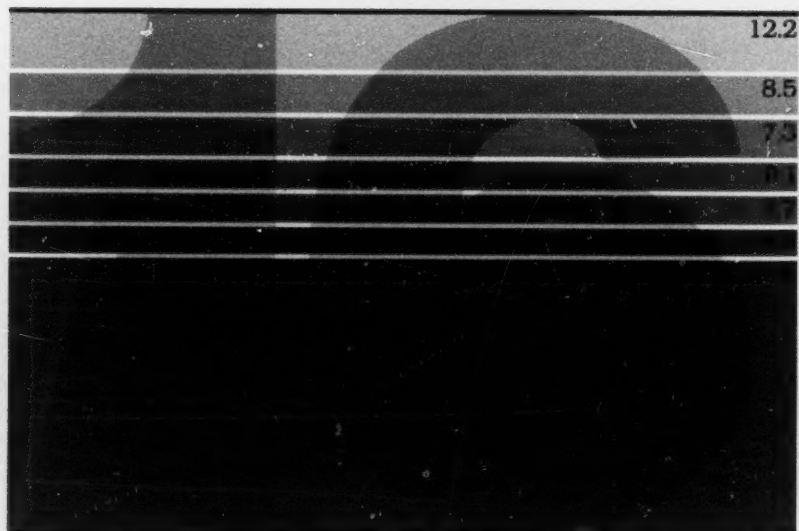


Question 16

"During your productivity improvement effort, what information services or products were not available in the market place that would have been of significant value to you?"

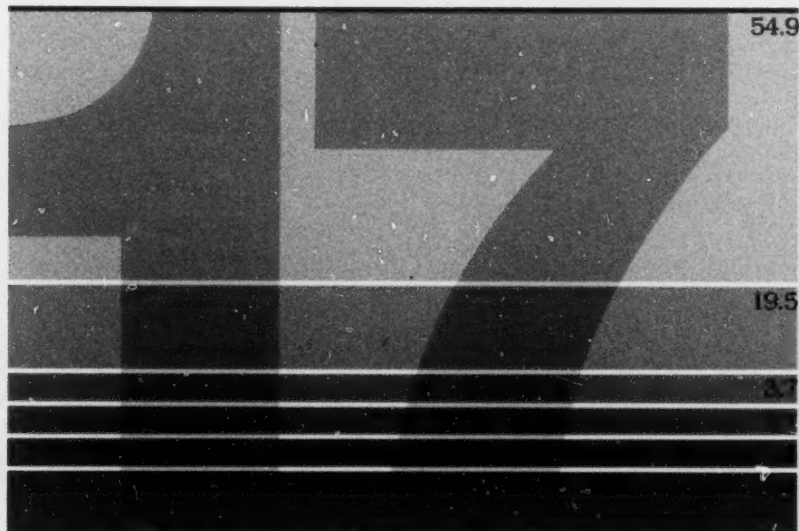
Just half the respondents answered this question, but their answers focused on three deficiencies:
1) measurement information data; 2) information about similar companies' experiences; 3) tailored software packages, and training materials to support improvement efforts.

Missing Element	Percent
Information About Productivity Measurement	12.2
Information About Similar Companies and Their Efforts	8.5
Personally Tailored Software Packages	7.3
Training Materials to Support Improvement Effort	6.1
Information About Alternatives	3.7
Other	4.6
No Response	57.6



A majority—54.9 percent—indicated they would extend present activities, while other respondents identified techniques or elements they planned to implement. Of these, 19.5 percent identified electronic mail. Several companies have plans to identify opportunity areas, and implement measurement techniques.

Plans	Percent
Extend Present Activities	54.9
Test Electronic Mail	19.5
Identify Opportunity Areas	3.7
Implement Measurement	3.7
Other	4.6
No Response	13.6



Question 18

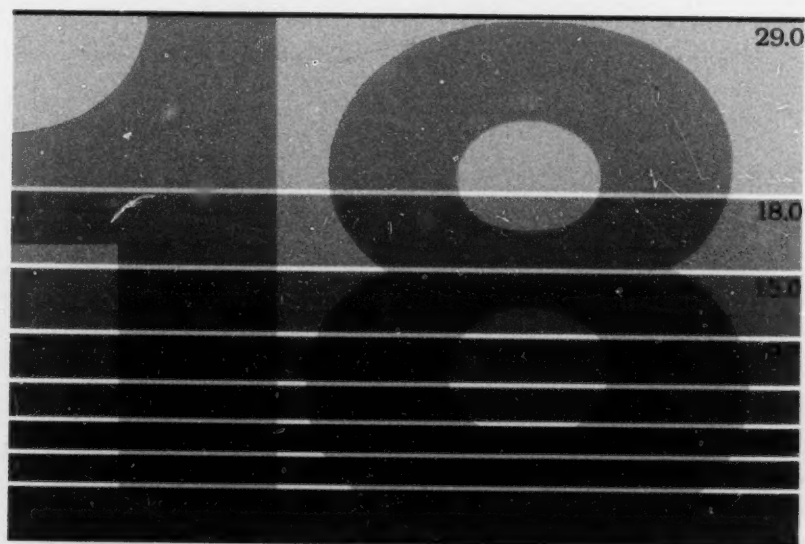
"What is the most significant lesson learned from your productivity effort?"

Once again the difficulty of measuring office productivity was emphasized. Well over one quarter of the respondents called that troublesome factor their most significant lesson.

Time for an effort to mature and show results was the most significant lesson of 18 percent of the participants. Top management support and involvement is required for success was ranked most significant by almost as many—15 percent.

Beyond those three lessons, others learned of the importance of keeping staff updated and informed of efforts, and that extensive planning increases the likelihood of success.

Lesson	Percent
Office Productivity Is Very Difficult To Measure	29.0
Time is Required for the Effort to Mature and Realize Results	18.0
Top Management Support and Involvement is Required	15.0
It is Important to Keep the Staff Updated and Informed	9.7
Extensive Planning Will Increase the Likelihood of Success	8.3
It is Difficult to Locate Reliable Information	4.2
There's Definite Need and a Wide Range of Problems Exist	2.8
Other	13.0



Who Are Today's White-Collar Workers?

There is no typical white-collar worker. The people who work in offices perform many diverse functions, from greeting visitors in the lobby and adding columns of figures to researching the profitability of possible acquisitions and chairing meetings of the board.

In 1981, the U.S. government reported a total white-collar work force of 51,848,000, divided into four groups:

Professional and technical workers (16,055,000) are highly trained people, including scientists, engineers, teachers, medical practitioners, entertainers, writers and accountants.

Managers and administrators (11,315,000) include corporate executives, school and health service administrators and self-employed business people.

Sales workers (6,291,000) are employed by retail and wholesale companies, manufacturing firms, insurance companies and real estate agencies.

Clerical workers (18,187,000) are the largest and fastest-growing occupational group.

White-Collar Costs

White-collar costs account for more than \$1 trillion annually. Recent statistics show that while office workers make up more than 53 percent of the average company's workforce, they make up about 70 percent of its payroll. Both percentages will increase dramatically over the next decade, and a study by Booz, Allen and Hamilton, Inc., shows white-collar costs rising to 1.5 trillion by 1990.

**White Collar Productivity:
A New Challenge**

While the number of white-collar workers is rising rapidly, the level of white-collar productivity isn't. The diversity of white-collar jobs and the wide range of tasks performed by office workers make it difficult to quantify real gains.

In our factories we have typically seen an annual productivity improvement of 3 percent, according to the U.S. Bureau of Labor Statistics. In our offices the rate of improvement is considerably less.

American Productivity Center statistics show that predominantly white-collar industries accounted for 55 percent of the total hours worked in the private business sector in 1980, compared with only 38 percent in 1948.

But while the amount of white-collar time has increased, the level of white-collar output has lost ground. Over a 32-year period, white-collar industries had an average annual productivity increase of only 1.8 percent compared to 2.4 percent for private business as a whole, according to the American Productivity Center.

Productivity indexes for 1982 show that in white-collar industries, the average annual productivity from 1973-81 rose only 0.2 percent, compared to 1.8 percent for 1965-73, and 2.4 percent for 1948-65.

The American Productivity Center notes that "in industries where there is a substantial white-collar contingent, there is probably reason to question the level of productivity." In the finance and insurance industry, for example—an area dominated by white-collar workers—figures show a recent annual productivity *decline* of 3 percent.

As the shift toward an information-based economy continues—and as white-collar costs continue to climb—the need for improving productivity will become even more acute.

A Call For New Solutions

Given the need for productivity, and the fact that office workers are aware of this need, why isn't white-collar productivity on the rise?

One reason is that with the shift to an information-based economy, American business finds itself on unfamiliar territory. A century ago, the industrial revolution spawned problems that workers and their supervisors had never confronted before. We are now undergoing a similar transition.

To boost productivity in the midst of widespread change requires new thinking.

The first step to greater white-collar productivity is to recognize that what works in the plant won't necessarily work in the office. Time/motion studies may produce positive results in some clerical areas, but the lessons of industrial engineering are, for the most part, of limited value, because in many situations white-collar work is not patterned or sequential, and does not result in a tangible product.

Labor Productivity (output per hour) Source: American Productivity Center, 1982.	Share (%) of Hours		Actual Levels (real output per hour, 1972 \$)			Average Annual % of Change		
	1948	1981	1948	1978	1981	'48-65	'65-73	'73-81
Private Business Economy	100	100	3.48	7.54	7.59	3.2	2.4	0.7
Segments:								
Farming	18.3	4.2	1.13	4.55	5.51	5.3	5.0	4.0
Manufacturing	29.0	27.7	3.65	8.15	8.40	3.0	2.8	1.4
Non-Farming/ Non-Manufacturing (includes White-Collar)	52.7	68.1	4.20	7.48	7.39	2.4	1.8	0.2
Sectors:								
Goods-Producing	54.3	40.3	2.93	7.44	7.58	4.0	2.7	0.9
Services-Producing	45.7	59.7	4.12	7.62	7.60	2.3	2.2	0.6

White-Collar Workers (continued)

Investing In Office Workers

Management is still looking to the factory rather than the office for productivity gains, and making investments accordingly.

Today's factory worker is backed by a \$25,000 average investment in machinery and equipment, compared to a \$2,500 investment in furniture and business machines for the office worker.

While the need for proper tools and working conditions in the factory is unquestioned, the prevailing attitude is that office workers can make do with inadequate furniture, poorly structured offices and outdated equipment.

As white-collar productivity becomes increasingly important, capital investment in the office will quadruple, reaching \$8,000-10,000 per worker by 1989. Most of this money will be spent on electronic equipment and task-supportive office furniture.

Meeting The Needs Of A New Breed Of Office Workers

The goals and expectations of white-collar workers have changed considerably in the last decade.

Today's office workers are a sophisticated and complex group — have better educations and are more highly motivated than ever before. A recent study found them to be open-minded, outspoken, and accepting of conflict. They have a high awareness of their field and their company, and are more demanding and more likely to expect rapid advancement than in the past.

A Steelcase-sponsored National Study of Office Environments, entitled "Comfort and Productivity in the Office of the 80's," completed by Louis Harris and Associates, Inc., confirms these observations. In this study, it was found that majorities of office workers feel they are better off than blue-collar workers in terms of their ability to communicate with management, and their status in society.

Ninety-one percent of the workers surveyed in a 1978 Steelcase/Harris Study, indicated that it was important for them to have a say in deciding how their jobs would actually be carried out, and the methods to be used.

**Electronic Office Equipment:
Efficient, But Effective?**

The white-collar explosion is accompanied by a proliferation of electronic equipment. According to Predicasts Inc., since 1972, the total number of terminals in use has grown from 668,000 to 4,098,000 in 1980.

The first users of the new technology were primarily clerical people, but now computers are found at all levels of the organization. Within the next few years the VDT will become a standard feature in executive and managers' offices.

By storing and transmitting information electronically, we should see large productivity gains in such office functions as:

- typing written material
- proofing and editing typed material
- filing and retrieving reports
- doing research
- drafting original material
- scheduling meetings
- billing and accounting
- handling telephone calls
- copying material
- mailing material

A 1980 Booz, Allen, Hamilton study indicated that proper application of electronic tools could save 15% of knowledge worker time by 1985.

White-Collar Workers (continued)

The key phrase is *proper application*. Electronic office machines are tools that allow us to complete tasks more efficiently, but they won't have the desired impact on white-collar productivity unless they are used *effectively*.

The people who work with electronic equipment determine its success. A high level of employee participation in designing the electronic office system, planning the installation, and training will pay off in positive attitudes and a satisfying work environment.

Employee comfort is also an important consideration. As white-collar workers spend more time at VDT's, they are experiencing new physical and psychological stress. The physical problems include eyestrain, headaches, neck pains, backaches and shoulder strain. The psychological problems are more difficult to categorize, but just as inhibiting to productivity, creating feelings of low self-esteem, insecurity and a general hostility to the equipment.

A Two-Way Approach

The National Study of White-Collar Productivity consists of two elements: 1) A survey of current efforts to improve office productivity and 2) Detailed case histories of the more successful and representative efforts.

Who Was Surveyed?

A total of 685 firms, selected because of their known interest in the productivity and/or quality of work life issue, received the survey. In each case, the firm had prior contact with the American Productivity Center.

Of the total, 140 firms responded. Follow-up calls to the firms that did not respond revealed that the majority did not have a program to improve office productivity underway. Survey forms were completed by 99 firms.

The survey, then, includes a diverse group of firms and functional office areas. In all, the companies cover more than 30 different types of business.

Major Categories Of Offices Represented In The Survey Analysis.

Type	Percent
Administration and Clerical Support	44
Accounting, Billing and Claims	14
Engineering	9
Information Services and Data Processing	8
Human Resources and Personnel	6
Research and Development	5
Corporate Planning	5
Other Diverse	19

The range of responding firms covers the gamut from such giants as American Express, W.R. Grace, IBM, Exxon and American Telephone and Telegraph, to such small specialized firms as Gem Savings, Teas Nursery Co., and Williams Bakers (see list, page 47).

More than half of them—55 percent—fall into three major classifications: 1) light and heavy manufacturing; 2) material and chemical processing; and 3) finance and insurance.

**What Kind Of Work
Was Covered?**

Responding firms were asked to select an office context where a major productivity effort was focused.

Many job titles were reported by the responding companies, with 75 percent of them focused in the following four areas: 1) administration and clerical support; 2) accounting, billing and claims; 3) information services; and 4) engineering.

What Was Asked?

To develop the questionnaire, a list of questions on the subject of office productivity was narrowed to 14 formatted on a six-page survey form. Questions provided for discussion-type or open-ended and tabulation-type responses.

After review by a research team at the American Productivity Center, the draft was distributed to eight external organizations for review. Their documents and suggestions were analyzed and incorporated into the final version which contained 18 questions (see pages 18 through 36).

Major Industries Represented In The Survey Analysis.

Type	Percent
Light and Heavy Manufacturing	27
Material and Chemical Processing	19
Finance and Insurance	9
Transportation	8
Miscellaneous Services	6
Communications	5
Government	5
Health Care	4
Other Diverse	17

Surveys were distributed over a two-week period beginning June 20, 1982. Respondents were given ten days to reply. Follow-up to all nonrespondents was done in the following four weeks.

How The Data Was Analyzed

Nearly all of the information was coded for computer-assisted analysis. Arithmetic means (averages), percentages and ratios were calculated where appropriate. Where qualitative analysis was more meaningful, examples and illustrations were extracted and identified.

How Case Histories Were Selected

The criteria for the selection of case histories was:

1. Are there clear indications of a *successful* effort?
2. Have *measures* of quantitative, or at least qualitative outcomes been employed?
3. Has the effort had an opportunity to *mature*?
4. Has a combination or *mixture of techniques* been used?
5. Does the effort embody a significant representation of the office work or the number of persons employed?

How Case Histories Were Developed

A series of interviews—typically eight to ten—with a “vertical slice” of an office, including management, professionals and support staff, formed the basis of case history development. Interviews followed a scheduled, standard format, designed to further an understanding of the major categories of information, such as planning, implementation, outcomes and general observations.

The goal was to derive a better understanding of the office services and dynamics than the survey could provide, as well as detailed productivity improvement activities.

A brief, evaluative scale related to the type of improvement techniques used, was distributed to approximately 25 persons in the office “slice.”

When the case history was developed, it was forwarded to the host firm for comment and final approval.

Companies Responding To Survey

Abbott Laboratories: North Chicago, Illinois
Aetna Life and Casualty: Hartford, Connecticut
Alabama Power Company: Birmingham, Alabama
Alcan Aluminum Corporation: Cleveland, Ohio
Alcoa: Davenport, Iowa
Allen-Bradley Company: Milwaukee, Wisconsin
American Express Company: New York, New York
American Hoist and Derrick Company: St. Paul, Minnesota
American Telephone and Telegraph Company:
Parsippany, New Jersey
Armstrong World Industries, Inc.: Lancaster, Pennsylvania
Atlas Powder Company: Tamaqua, Pennsylvania
Babcock and Wilcox Company: Alliance, Ohio
BEA Associates, Inc.: New York, New York
Beatrice Foods Company: Chicago, Illinois
Bethlehem Steel: Bethlehem, Pennsylvania
Boise Cascade Corporation: Boise, Idaho
Borg-Warner Corporation: Chicago, Illinois
Brown and Root, Inc.: Houston, Texas
Browning Ferris Industries Inc.: Houston, Texas
Bundy Corporation: Warren, Minnesota
Butler Manufacturing Company: Kansas City, Missouri
Cargill, Inc.: Minneapolis, Minnesota
Caterpillar Tractor Company: Peoria, Illinois
Centerre Bank: St. Louis, Missouri
Certain-Teed Corporation: Chowchilla, California
Champion International Corporation: Huntsville, Texas
City Public Service: San Antonio, Texas
Cleaver-Brooks: Lebanon, Pennsylvania

Companies Responding (*continued*)

Collins and Aikman Corporation; New York, New York
Commonwealth of Virginia/Consolidated Laboratory Services;
Richmond, Virginia
Consumers Union of the U.S., Inc.; Mt. Vernon, New York
Continental Illinois National Bank and Trust of Chicago;
Chicago, Illinois
Adolph Coors Company; Golden, Colorado
Corning Glass Works; Greenville, Ohio
Detroit Edison Company; Detroit, Michigan
Digital Equipment Corporation; Concord, Massachusetts
Dresser Foundation, Inc.; Dallas, Texas
Emhart Corporation; Hartford, Connecticut
Equitable Life Assurance Society of the U.S.;
New York, New York
Exxon Company, USA; Houston, Texas
FMC Corporation; Stephenville, Texas
Federal Mogul Corporation; Detroit, Michigan
First Bank System, Inc.; Minneapolis, Minnesota
First National Bank of Chicago; Chicago, Illinois
Foremost-McKesson, Inc.; San Francisco, California
Gem Savings; Dayton, Ohio
General Electric Company; Fairfield, Connecticut
General Dynamics Corporation; Pomona, California
General Telephone and Electronics Data Services;
Tampa, Florida
The Glenmede Trust Company; Philadelphia, Pennsylvania
W.R. Grace and Company Inc.; New York, New York
Great Dane Trailers, Inc.; Savannah, Georgia
Gulf Oil Corporation; Pittsburgh, Pennsylvania

HGH Association Corporation: Raleigh, North Carolina
Hallmark Cards, Inc.: Kansas City, Missouri
Harsco Corporation: Camp Hill, Pennsylvania
H.J. Heinz Company: Pittsburgh, Pennsylvania
Hilti Industries, Inc.: Tulsa, Oklahoma
Honeywell, Inc.: Minnetonka, Minnesota
Honeywell, Inc.: Lexington, Massachusetts
Honeywell, Inc.: Phoenix, Arizona
George A. Hormel and Company: Austin, Minnesota
Hospital Corporation of America: Nashville, Tennessee
Houston Lighting and Power Company: Houston, Texas
Houston Natural Gas Corporation: Houston, Texas
IBM Corporation: Armonk, New York
Ingersoll-Rand Company, Inc.: Woodcliffe Lake, New Jersey
Indian Industries, Inc.: Evansville, Indiana
Intel Corporation: Santa Clara, California
Kaiser Aluminum: Oakland, California
Kennecott Mineral Company: Salt Lake City, Utah
Kerr-McGee Chemical Corporation:
Oklahoma City, Oklahoma
Kimberly-Clark Corporation:
Beech Island, South Carolina
The Kroger Company: Cincinnati, Ohio
Lear Siegler, Inc.: Santa Monica, California
Levi Strauss and Company: San Francisco, California
Lilly Endowment: Indianapolis, Indiana
The Mead Corporation: Dayton, Ohio
Memorial Hospital System: Houston, Texas
Merck and Company Inc.: Rahway, New Jersey

Companies Responding (continued)

Miami Valley Hospital; Dayton, Ohio
Miles-Home Division; Minneapolis, Minnesota
Minnesota Mining and Manufacturing Company, Inc.;
St. Paul, Minnesota
Minnesota Power and Light Company; Duluth, Minnesota
Monsanto Company; St. Louis, Missouri
Monsanto Company; Greenwood, South Carolina
Morrison-Knudsen Company, Inc.; Boise, Idaho
Murphy Oil Corporation; El Dorado, Arkansas
Naval Air Rework; Cherry Point, North Carolina
N.L. Treating Chemical Company; Channelview, Texas
Nabisco Brands, Inc.; East Hanover, New Jersey
Nutriline Products, Inc.; Buena Park, California
Oil Dynamics, Inc.; Tulsa, Oklahoma
Olin Chemicals Corporation; Stamford, Connecticut
Owens-Illinois, Inc.; Valdosta, Georgia
Owens-Illinois, Inc.; Lake Butler, Florida
Panhandle Eastern Pipe Line Company; Kansas City, Missouri
Penn Mutual Life Insurance Company;
Philadelphia, Pennsylvania
J.C. Penney Company, Inc.; New York, New York
Pennsylvania Blue Shield; Camp Hill, Pennsylvania
Pepsi Cola Metropolitan Bottling; Purchase, New York
The Permian Corporation; Houston, Texas
Personnel Development Company; Baltimore, Maryland
Phillips Petroleum Company; Bartlesville, Oklahoma
Polaroid Corporation; Waltham, Massachusetts
Portland General Electric Company; Portland, Oregon
Price Waterhouse and Company; New York, New York

The Quaker Oats Company; Chicago, Illinois
Republic Bank Corporation; Dallas, Texas
Reynolds Metal Company; Richmond, Virginia
Robbins and Myers, Inc.; Dayton, Ohio
Rosemount, Inc.; Minneapolis, Minnesota
The St. Paul Fire and Marine Insurance Company;
St. Paul, Minnesota
Sanders Associates, Inc.; Nashua, New Hampshire
Saunders Industries; Houston, Texas
Schlumberger Well Services; Houston, Texas
Southern Company Services Inc.; Birmingham, Alabama
Southern Pacific Transportation Company;
San Francisco, California
Southwestern Bell Telephone Company; Houston, Texas
State Farm Companies Foundation; Bloomington, Illinois
State Mutual Life Assurance Company of America;
Worcester, Massachusetts
The Superior Oil Company Inc.; Houston, Texas
Teas Nursery Company, Inc.; Houston, Texas
Travenol Laboratories, Inc.; Deerfield, Illinois
U.S. Customs Service—Houston Region; Houston, Texas
Valley National Bank of Arizona; Phoenix, Arizona
Washington National Corporation; Evanston, Illinois
Weldon T. Weekley; Houston, Texas
Wells Fargo Bank; San Francisco, California
Williams Bakery; Eugene, Oregon

Relevant Sources

Appelbaum, S. "The Middle Manager: An Examination of Aspirations and Pessimism." *The Personnel Administrator*, January, 1977, pp. 39-43.

American Productivity Center. "Productivity Perspectives." American Productivity Center: Houston, Texas. 1981.

Chamber of Commerce of the U.S. "Workers Attitudes toward Productivity." Chamber of Commerce of the U.S.: Washington, D.C. 1980.

Chamber of Commerce of the U.S. "Productivity, People and Public Policy." Economic Policy Division, U.S. Chamber of Commerce: Washington, D.C. 1981.

Galitz, W. *Human Factors in Office Automation*. Life Office Management Association: Atlanta, Georgia. 1980.

Kay, E. *The Crisis in Middle Management*. Amacom: New York, New York. 1974.

Gregerman, Ira. "Knowledge Worker Productivity: Characteristics and Measures. Transactions, AACÉ: Toronto, Canada. 1981.

Heijn, Herman. "Automate the Organization...or Organize the Automation?" American Productivity Center: Houston, Texas. 1982.

Sentry Insurance, Harris & Associates, Center for Policy Research. "Perspectives on Productivity: A Global View." Sentry Insurance: Stevens Point, Wisconsin. 1981.

Steelcase Inc. and Harris & Associates. "The Steelcase National Study of Office Environments: Do They Work?" Steelcase, Inc.: Grand Rapids, Michigan. 1978.

Steelcase Inc. and Harris & Associates. "The Steelcase National Study of Office Environments, No. II: Comfort and Productivity in the Office of the 80's." Steelcase Inc.: Grand Rapids, Michigan. 1980.

The American Productivity Center

The American Productivity Center is a non-profit organization devoted to the improvement of productivity and quality of work life in the private sector.

Its objective is to provide a national resource of leading-edge knowledge and assistance on those issues. Founded in 1977 by Dr. C. Jackson Grayson, its membership now includes more than 300 corporations, foundations and individuals that share his belief that the primary responsibility for productivity and quality of work life improvement lies within the business and labor communities.

The APC board of directors includes leaders from business, labor, government and academia. A professional staff of 50, located at its Houston headquarters, covers all business disciplines and has experience in a wide spectrum of industry.

While it addresses a broad perspective of productivity and quality of work life issues, it concentrates on five major areas:

Productivity and quality of work life management.

White-collar productivity.

Productivity measurement.

Labor/management cooperation and employee involvement.

National policy.

Major activities of the Center include publications, presentations, education and training materials, workshops and seminars, library resources and research, and individualized consulting services.

Steelcase Inc.

Headquartered in Grand Rapids, Michigan, Steelcase is the world's leading manufacturer of systems and conventional furniture for the office.

Founded in 1912, the company has some 8,000 employees, with 9.1 million square feet of manufacturing space at six sites in the United States. Foreign operations span seven countries. Sales exceeded \$800 million worldwide in 1981.

Steelcase is strongly committed to office environment research. To examine white-collar needs in light of new tasks and changing demands, the company sponsored two national studies (1980 and 1978) exploring the relationship between the office environment and employee productivity.

Conducted by Louis Harris and Associates Inc., the studies confirmed that comfort can improve productivity, identified factors that affect worker performance, and quantified attitudes of office personnel.

The company has built a reputation for timely innovation. Early landmarks include the development of the "fireproof" desk; teaming with architect Frank Lloyd Wright to produce the forerunner of open office furniture; introduction of the first modular office furniture and the first office furniture in colors. In less than a decade, Steelcase has also become a major factor in the wood office furniture industry.

The company introduced Series 9000, designed for the computerized office in 1973. Today, Series 9000 is the world's leading open plan furniture system. Steelcase expanded the line in 1978 and extended it further, under the name Ultronic™, in 1981. Ultronic 9000 incorporates cableways, circuitry and accessories designed to accommodate video display terminals and other types of electronic equipment and adjusts to operator comfort needs.

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